

# Plant Cell Diagram

## Teacher Directions

Diploma Program Skills: Examination Paper 2 and 3 style question

This activity is suitable for use as an independent assignment, Think-Pair-Share, or group task. Student will get practice in analyzing data and presenting this analysis. They will get an opportunity for guided practice in manipulative skills and drawing diagrams. If students did this activity as a placemat activity it would also be appropriate to assess personal skills to determine the student's ability to work cooperatively and show task commitment while contributing to a group.

It would be a useful lead-up to the kind of thinking in which students must engage for Theory of Knowledge to have students brainstorm a list of things we would not know without the microscope. An extension to the discussion would be to think about what limitations the microscope makes to what we can know about cells. For example, cells are most often killed and stained, are there things that cannot be seen using this technology.

| Levels/marks        | Aspect 1  | Aspect 2   | Aspect 3  |
|---------------------|---|--|---|
|                     | Self-motivation and perseverance  | Working within a team  | Self-reflection   |
| <b>Complete/2</b>   | Approaches the project with self-motivation and follows it through to completion. | Collaborates and communicates in a group situation and integrates the views of others. | Shows a thorough awareness of their own strengths and weaknesses and gives thoughtful consideration to their learning experience. |
| <b>Partial/1</b>    | Completes the project but sometimes lacks self-motivation.                        | Exchanges some views but requires guidance to collaborate with others.                 | Shows limited awareness of their own strengths and weaknesses and gives some consideration to their learning experience.          |
| <b>Not at all/0</b> | Lacks perseverance and motivation.  | Makes little or no attempt to collaborate in a group situation.                        | Shows no awareness of their own strengths and weaknesses and gives no consideration to their learning experience.                 |

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## Student directions

### Plant Cell Diagram Task

#### Part 1

In this activity you will observe plant cells under the microscope. The ability to see objects that are too small for our eye to resolve as separate was a significant technological break through in science. Imagine science without microscopes. Which areas of biology and medicine would we be unable to study without a microscope?

From your observations of plant cells, draw a labeled diagram of a eukaryotic plant cell showing all the organelles that would be visible under a light microscope. Annotate the diagram of the organelles that are visible under light microscopy with the functions of those organelles.

#### Part 2

State the names of the organelles of a plant cell that are visible under electron microscopy. Describe the function of these organelles in the cell.

#### Part 3

Distinguish between an animal cell and a plant cell.

## Support material

### Markschemes/marketing notes:

#### Part 1:

- diagram may include: nucleus, nucleolus, chloroplasts, cell wall, cell membrane (will vary

## Plant Cell Diagram

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- because of different specimens students may be viewing)
- functions

nucleus - control centre of the cell

nucleolus- makes ribosomes

chloroplasts: carry out photosynthesis

cell wall - provides structure and protection

cell membrane- regulates entry and exit from cell

Part 2:

- mitochondrion: carries out cell respiration
- large plant vacuole: storage area and maintains turgor pressure
- ribosomes: site of protein manufacture
- Golgi Bodies: package materials for export
- endoplasmic reticulum: transport within the cell
- other appropriate organelles covered in unit

Part 3:

| Characteristic    | Plant Cells  | Animal Cells                 |
|-------------------|--|------------------------------|
| Outer boundary    | Cell wall and membrane                             | Cell membrane only           |
| Energy processing | Chloroplasts and mitochondrion                     | Mitochondrion only           |
| Storage           | Large central vacuole to store materials and water | Small vacuoles and vessicles |

**Rubric:**

**Student work samples:**

**Additional resources:**

**Examiner notes:**

Subject:  
Biology

DP Component & Criteria:  
Extended Response Questions/Paper 2 and 3

Component type:  
Internal

MYP Criteria:  
Group 4 / Sciences

Plant Cell Diagram

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